



## Workshop: Medical Robotics: First in Human - What does it take?

Code: WPM07 | Wednesday, 26<sup>th</sup> June  
Royal Geographical Society

### Co-Chairs and Organisers:

Christos Bergeles, King's College London, UK  
Pierre Dupont, Boston Children's Hospital, Harvard Medical School, MA, USA  
Russell Taylor, John Hopkins University, USA

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**\*This workshop will be filmed\***

### Lunch

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|-------------|---|
| 13:30       | <b>A 30-year Journey in Surgical Robotics, from Research to Exit</b><br><i>Stéphane Lavallée, Surgivision, France</i>                       |
| 14:00       | <b>Experiences with the Commercial Translation of a Lower Limb Exoskeleton</b><br><i>Michael Goldfarb, Vanderbilt University, USA</i>       |
| 14:30       | <b>Endovascular Robotics – A Review of the Approaches, Challenges and Opportunities Ahead</b><br><i>David Leo Fischel, Stereotaxis, USA</i> |
| 15:00       | <b>From Surgeon to Wannabe Entrepreneur</b><br><i>Dennis Fowler, KARL STORZ Endoscopy-America, USA</i>                                      |
| 15:30-16:00 | <b>Coffee Break</b>   |
| 16:00       | <b>\$0 to \$5.75 billion: Making a Medtech Unicorn</b><br><i>Christopher Velis, Miraki Innovation, USA</i>                                  |
| 16:30       | <b>Let's Start a Medical Robot Company Together</b><br><i>Jian Zhang, Noah Medical, USA</i>   |
| 17:00       | <b>Closing Remarks</b>  |



**Speaker:**

*David Leo Fischel, Chairman & CEO, Stereotaxis; Principal, DAFNA Capital Management, US*

**Title:**

*Endovascular Robotics – A Review of the Approaches, Challenges and Opportunities Ahead*

**Abstract:**

The rapid adoption of surgical robotics across open and laparoscopic surgery led to a wave of innovative approaches for the robotic navigation of interventional catheters. Those approaches faced various development, clinical, and commercial challenges. They also found some success. This talk will provide context for the various robotic approaches to endovascular surgery and review the challenges, successes and opportunities going forward.



**Speaker:**

*Dennis Fowler, MD, CMO, KARL STORZ Endoscopy-America, Inc.; formerly CEO, Platform Imaging; EVP, Titan Medical; Professor of Surgery, Columbia University; VP Medical Director of Preoperative Services, New York Presbyterian Hospital/Columbia, USA*

**Title:**

*From Surgeon to Wannabe Entrepreneur*

**Abstract:**

The desire to be a medical entrepreneur is triggered by different events for different people. Success for most medical entrepreneurs requires the accumulation of experience in many domains: the clinical need, engineering and product development, purchasing/marketing experience, and patent law. This presentation will discuss the importance of my experiences with clinical surgery, engineering and product development, managing and purchasing in the operating room environment, and commercial product development in relation to my attempt to be an entrepreneur.



**Speaker:**

*Michael Goldfarb, Professor, Vanderbilt University; Co-founder, Synchro Motion; patents licensed to Freedom Innovations (acquired by Otto Bock); patents licensed by Parker Hannifin (indigo.com), USA*

**Title:**

*Experiences with the Commercial Translation of a Lower Limb Exoskeleton*

**Abstract:**

This talk will describe prior and ongoing experiences translating robotic exoskeletal and prosthetic device research from academic proposal to commercial product. Experiences in this regard include

licensing IP and other technology to small, mid-sized, and large commercial partners, including recent efforts at developing technology through a startup company. These efforts at translation have been both successful and unsuccessful. This talk will focus on the most successful case, in which the technology went from research proposal concept to an FDA-approved product in less than a decade, which included FDA class II de novo trials at multiple sites. In particular, I will discuss practices that I think were helpful in successfully translating research from the university to the commercial market, in addition to challenges and potential pitfalls of which to be aware when doing so.



**Speaker:**

*Stéphane Lavallée, President & CEO, Surgivisio; Founder & former President, Orthotaxy (acquired by J&J), France*

**Title:**

*A 30-year Journey in Surgical Robotics, from Research to Exit*

**Abstract:**

In 1986, Pr. Cinquin of Grenoble University gave me the opportunity to undertake a PhD in Computer Assisted Medical Interventions. My thesis included a chapter on the development of a robot for neurosurgery, in collaboration with Pr. AL Benabid's team at Grenoble Hospital. At the time, most people I talked to about my work were either amused, suspicious or horrified. But three years later, we operated on our first patient. There was no CE mark in 1989, only ethical committees, so the surgeon's decision to operate with a robot carried a lot of weight. Our robot was the first to be used in clinical routine; it was used for hundreds of cases (DBS, biopsies, etc.). Three decades later, surgical robotics have become mainstream. It has been a long journey with as many disappointments as there were successes, including successful exits, the key differentiator for me being perseverance and a fierce commitment to my initial values. Robotics technology has the power to change clinical outcomes in many specialties. We are on the right track, but there is a lot of work to do. Interestingly, it is no longer a business issue, but a pure engineering issue, in which usability is the key success factor.



**Speaker:**

*Christopher Velis, Founder and Executive Chairman, Miraki Innovation; Founder of Auris Health, USA*

**Title:**

*\$0 to \$5.75 billion: Making a Medtech Unicorn*

**Abstract:**

There are many ways to move from an idea to invention to innovation. Over several decades as advisor, venture capitalist and founder, Christopher has created a methodology to maximize the chances of success. By weaving creativity with disciplined investing and the science of entrepreneurship, Chris has formed a method that builds an idea into an innovation that saves lives.

In this talk, Christopher will share case studies to illustrate these principles and will describe the lessons learned in taking Auris Health from an idea to a \$5.75 billion surgical robotics company.



**Speaker:**

*Jian Zhang, CEO & Founder, Noah Medical, formerly #2 employee at Auris Health; Co-founder and CEO, RobotPhoenix; Engineer, Intuitive Surgical*

**Title:**

*Let's start a Medical Robot Company Together*

**Abstract:**

Dr Zhang worked on a medical robot prototype for cochlear implant surgery when he was at Columbia University. He will discuss how this venture started as a master student project in 2005 and ended up being a historical \$5.75B acquisition by Johnson and Johnson in 2019.